

# Week 3 - Lab 1: Analysis, Forecasting, Sorting and Filtering

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# Overview

- In this tutorial, we will practice:
  - Analysis and Forecasting
  - Sorting
  - Filtering

# Analysis and Forecasting

- In this section, we will use the Excel skills we learned in the previous tutorials to do some analysis on data and to forecast future changes of data.
- For Analysis: use Summary calculations and explain models.

# Analysis and Forecasting – Example

- Goal1: perform a **compound interest calculation**.
- A compound interest is the amount of money earned on a deposit during a period of time.
- Equation: It can be calculated using the following formula:  
 **$P = C (1 + r/n)^{nt}$** 
  - P = future value
  - C = initial deposit
  - r = interest rate (expressed as a fraction e.g. 0.06 = 6%)
  - n = # of times per year interest is compounded
  - t = number of years invested.

# Analysis and Forecasting – Example

- Design the Excel sheet such that it is **easy to read and make modifications**.
- Divide it into sections:
  - Equation/Formula
  - Legend
  - Parameters
  - Variables and Results

# Analysis and Forecasting – Example

Compound Interest Equation				
Formula: $P = C(1 + r/n)^{(nt)}$				
<b>Legend</b>				
P = Future value				
C= initial deposit				
r = interest rate (expressed as a fraction: eg. 0.06)				
n = # of times per year interest is compounded				
t = number of years invested				

Years Invested (t):	1
Initial Deposit (C):	\$ 10,000.00
Interest Rate ( r):	6%

Note the cell formats depending on the type of data.

# Analysis and Forecasting – Example

## Demonstrations of Various Compounding

Compounded(n)		Final Principal (P)	
1	(Yearly)	\$	10,600.00
2	(Semi-Annually)	\$	10,609.00
4	(Quarterly)	\$	10,613.64
12	(Monthly)	\$	10,616.78
52	(Weekly)	\$	10,618.00
365	(Daily)	\$	10,618.31

# Analysis and Forecasting – Example

fx  $=\$B\$13*(1+(\$B\$14/A20))^{(A20*\$B\$12)}$

11  
12  
13  
14

Years Invested (t):	1
Initial Deposit (C):	\$ 10,000.00
Interest Rate (r):	6%

Compounded(n)		Final Principal (P)
1	(Yearly)	\$ 10,600.00
2	(Semi-Annually)	\$ 10,609.00
4	(Quarterly)	\$ 10,613.64
12	(Monthly)	\$ 10,616.78
52	(Weekly)	\$ 10,618.00
365	(Daily)	\$ 10,618.31



# Analysis and Forecasting – Example

- Goal2: perform a Continuous Compounding Interest calculation.
- Equation:  $P = C e^{(rt)}$ 
  - $e$  = mathematical constant (EXP(1))
  - $P$  = future value
  - $C$  = initial deposit
  - $r$  = interest rate (expressed as a fraction e.g. 0.06 = 6%)
  - $t$  = number of years invested.

# Analysis and Forecasting – Example

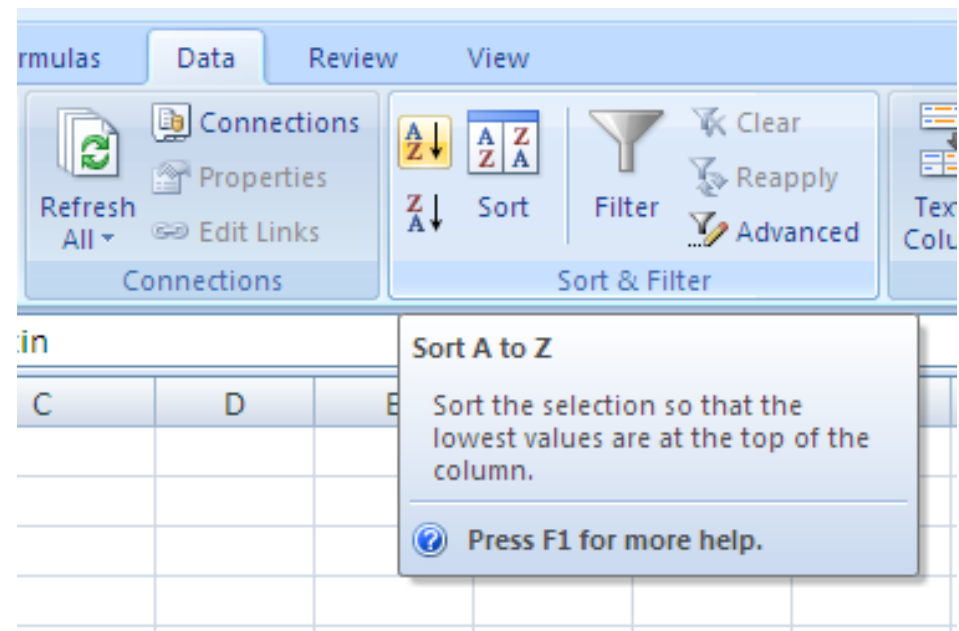
Demonstration of Continuous Compounding			
Formula: $P = C e^{(rt)}$			
Legend			
e = Mathematical Constant (e = 2.71828 18284 59045 23536...)			
Compounded(n)	Final Principal (P)		
Continuous	=B\$13*EXP(1)^(B\$14)		

# Sorting

- In Excel you can sort textual and numerical data.

A2	
A	
1	Employee Name
2	Martin
3	John
4	Jessica
5	Jamie
6	David
7	Dane
8	Andrew
9	Alice
10	Albert
11	

A1	
A	
1	Employee Name
2	Albert
3	Alice
4	Andrew
5	Dane
6	David
7	Jamie
8	Jessica
9	John
10	Martin
11	



# Sorting

	A
1	Salaries
2	300
3	200
4	400
5	120
6	600
7	430
8	80
9	60
10	90
11	



	A
1	Salaries
2	60
3	80
4	90
5	120
6	200
7	300
8	400
9	430
10	600
11	

**Sort** [?] [X]

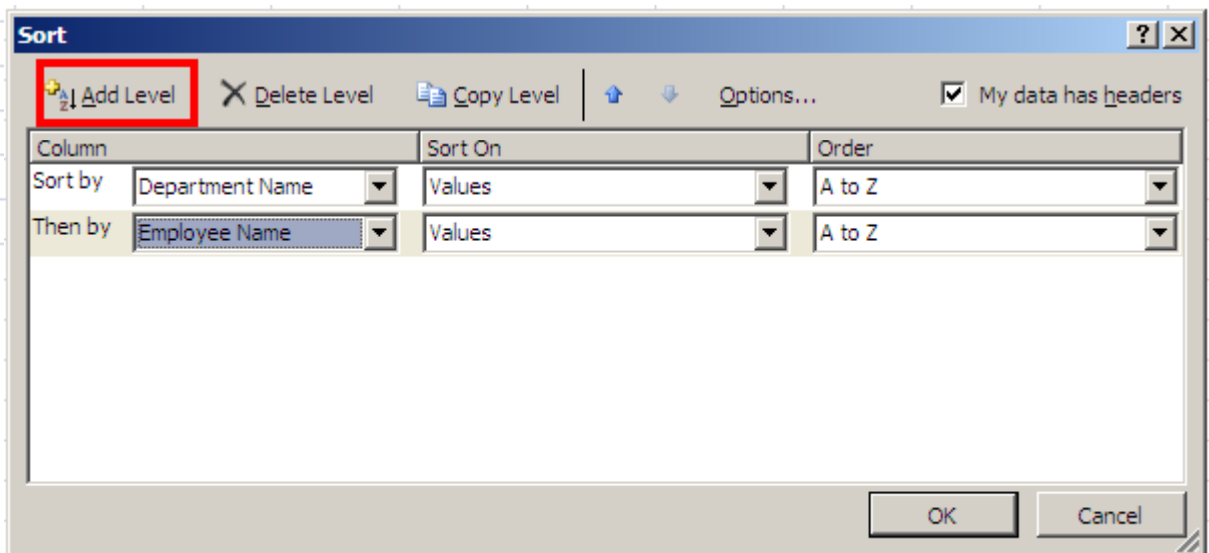
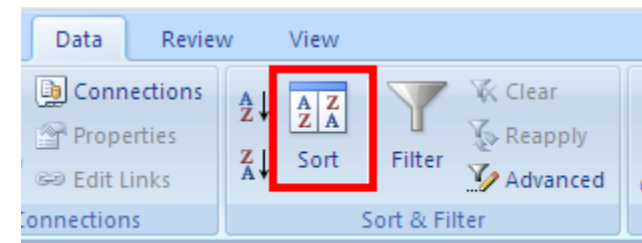
Add Level Delete Level Copy Level | Options... ☒ My data has headers

Column	Sort On	Order
Sort by Salaries	Values	Smallest to Largest

OK Cancel

# Sorting

	A	B
1	Department Name	Employee Name
2	Finance	Mark
3	Sales	Jessica
4	Human Resources	Martin
5	Finance	Albert
6	Customer Services	Dane
7	Finance	David
8	Customer Services	Andrew
9	Sales	Jamie
10	Finance	John
11	Customer Services	Jonathan
12		

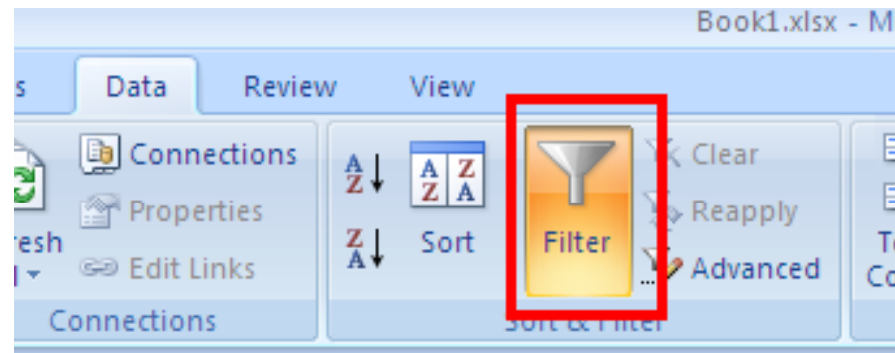
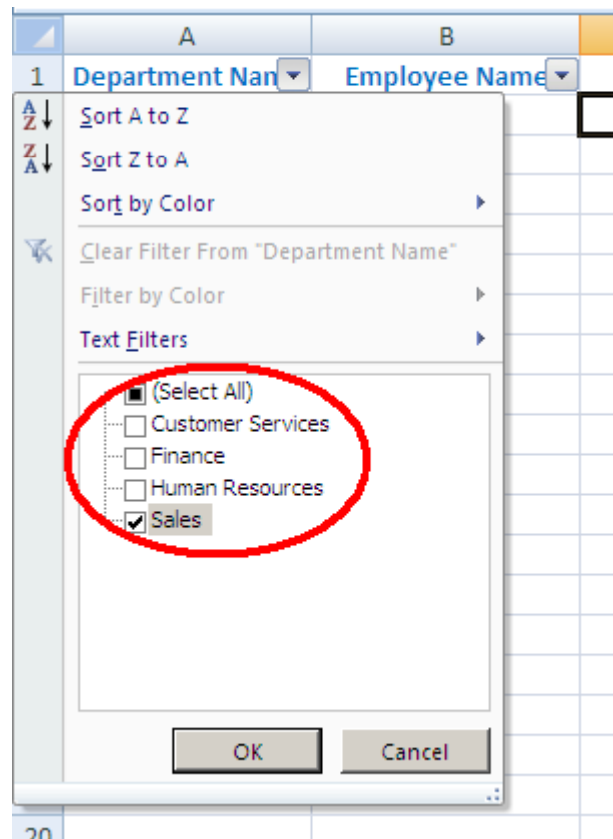


↓

	A	B
1	Department Name	Employee Name
2	Customer Services	Andrew
3	Customer Services	Dane
4	Customer Services	Jonathan
5	Finance	Albert
6	Finance	David
7	Finance	John
8	Finance	Mark
9	Human Resources	Martin
10	Sales	Jamie
11	Sales	Jessica

# Filtering

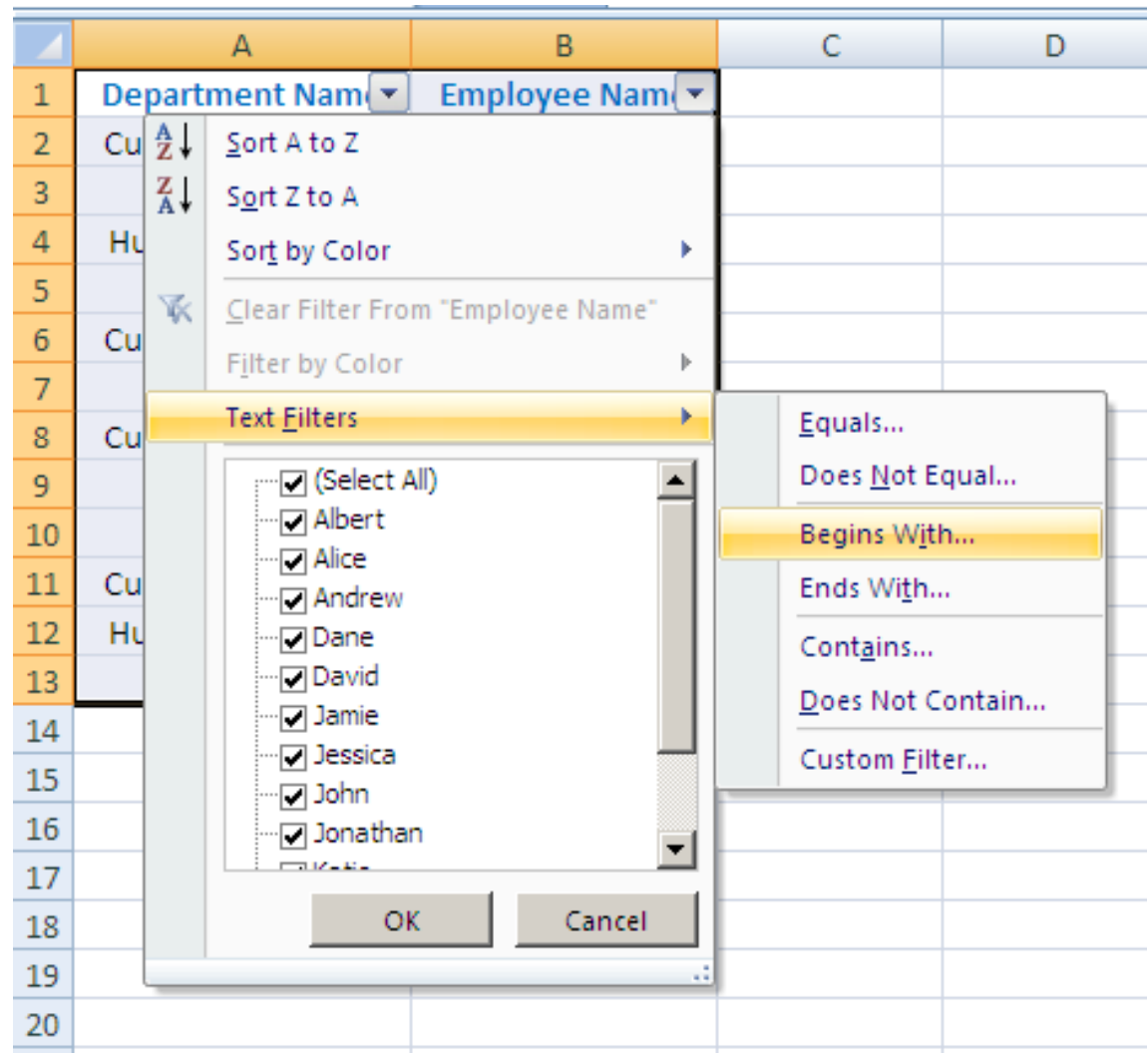
- Used to display part of the data according to some criteria.



	A	B
1	Department Name	Employee Name
10	Sales	Jamie
11	Sales	Jessica
12		

# Customized Filters

- To display only the names of employees that start with an "A"



# Customized Filters

	A	B
1	Department Name	Employee Name
2	Customer Services	Andrew
3	Customer Services	Dane
4	Customer Services	Jonathan
5	Finance	Albert
6	Finance	David
7	Finance	John
8	Finance	Mark
9	Human Resources	Martin
10	Sales	Jamie
11	Sales	Jessica
12		

**Custom AutoFilter** [?] [X]

Show rows where:

Employee Name

begins with [A]

☒ And ☐ Or

[ ] [ ]

Use ? to represent any single character  
Use \* to represent any series of characters

OK Cancel

G19 fx

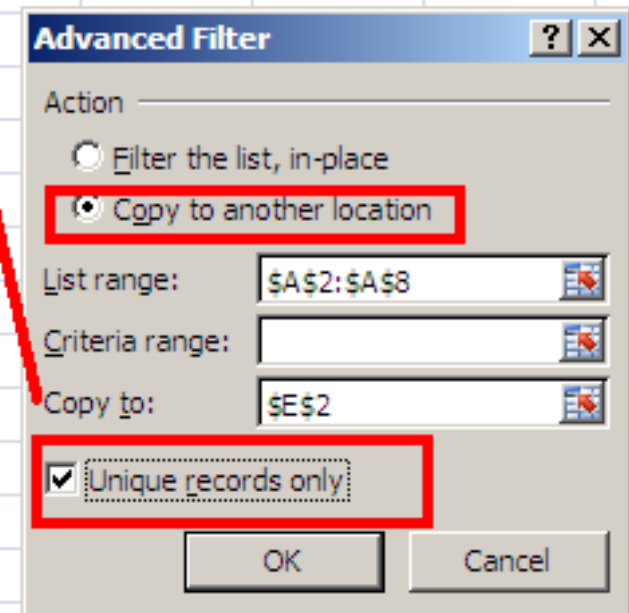
	A	B
1	Department Name	Employee Name
2	Customer Services	Andrew
5	Finance	Albert
12		



# Filtering for Unique Values

	A	B
1	Department Name	Employee Name
2	Finance	Mark
3	Sales	Jessica
4	Human Resources	Martin
5	Customer Services	Dane
6	Customer Services	Andrew
7	Sales	Jamie
8	Customer Services	Jonathan

Unique Departments Names



The Advanced Filter dialog box is shown with the following settings:

- Action:** ☒ Copy to another location
- List range:** \$A\$2:\$A\$8
- Criteria range:** (empty)
- Copy to:** \$E\$2
- ☒ Unique records only

Buttons: OK, Cancel

# Filtering for Unique Values

	A	B	C	D	E
1	Department Name	Employee Name			Unique Departments Names
2	Finance	Mark			Finance
3	Sales	Jessica			Sales
4	Human Resources	Martin			Human Resources
5	Customer Services	Dane			Customer Services
6	Customer Services	Andrew			
7	Sales	Jamie			
8	Customer Services	Jonathan			
9					

# Next: Review

- Next Tutorial is a review session
- Practice and be prepared to ask questions.